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DATE May 26, 2004

TO:

Name: Commissioner for Patents

Location: Washington, DC

Fax No.: (703) 872-9306

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FORMAL PAPERS

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Docket No. H 1215/1556 PCT/US

SN: 08/702,625

Art Unit: 1711

Confirmation No. 6917

Enclosure:

1. Reply to Examiner's Answer - 5 pages

RECEIVED  
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OFFICIALPATENT  
Docket No. H1215/1556 PCT/USIN THE UNITED STATES PATENT AND TRADEMARK OFFICEIn re: Application of  
Kluth et al.

Confirmation No. 6917

Serial No. 08/702,625

Examiner: John M. Cooney

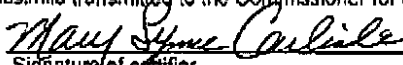
Filed: 08/23/1996

Art Unit: 1711

TITLE: FOAM PLASTIC FROM DISPOSABLE PRESSURIZED CONTAINERS

CERTIFICATION OF FACSIMILE TRANSMISSION

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REPLY TO EXAMINER'S ANSWERMail Stop Appeal Brief  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In the EXAMINER'S ANSWER the Examiner makes statements which require comment by Appellants.

At the paragraph beginning at the lower one third of page 3 of the EXAMINER'S ANSWER the Examiner states:

"Pauls differs from appellants' claims in that it does not recite monomeric isocyanate contents of its prepolymers or particularly specify the removal of residual monomeric isocyanate from its reactive components."

The Examiner is correct in that there is no explicate statement of the limits of unreacted monomer in the Pauls composition; however, the statement is misleading. The examples disclose the content of unreacted diisocyanate in the Pauls' compositions. The equivalent ratio of

NCO

OH groups introduced into the composition and the amount of unreacted isocyanate in

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the Pauls' composition can be easily calculated from the examples.

The following table is a tabulation of the

$\frac{\text{NCO}}{\text{OH}}$  equivalents ratio of reactants introduced to form the Pauls composition, the calculated percentage of unreacted isocyanate and the calculated percentage of MDI in the foaming compositions of examples 1-7. The calculated percentage of unreacted MDI is based on an assumption that only MDI reacted and unreacted isocyanates being MDI and polymer MDI. The crude MDI starting material contained about 30% polymeric MDI with a functionality greater than 2.

TABLE							
Example	1	2	3	4	5	6	7
$\frac{\text{NCO}}{\text{OH}}$ Ratio	6.4	5.96	6.5	5.8	5.3	5	5.5
Percent Unreacted isocyanate (by wgt)	47	53	42.4	48	45.7	46.6	47.6
Percent Unreacted MDI	31.3	32.8	27.4	30.7	28.8	29.1	29.1

The functionality of the polyols was calculated using the formula at column 6, lines 6-10. The equivalents of OH groups was determined by dividing the weight of polyol by the molecular weight and multiplying by the functionality. The number of equivalents of NCO groups was calculated by multiplying the weight of the polyisocyanate by the percentage of NCO content and dividing by 42 (eq weight NCO group).

The percent unreacted crude MDI was calculated by subtracting the equivalents of NCO reacted from the equivalents of NCO groups introduced into the reaction, dividing the

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number by the NCO equivalents introduced into process and multiplying by the weight of crude MDI added. The weight of unreacted crude MDI was divided by the weight of the contents of the inner container to determine the percent of crude MDI in the inner container.

The percent of unreacted MDI in the inner container was determined by assuming the MDI reacted to the exclusion of poly MDI and subtracting the total amount of poly MDI in the crude MDI from the isocyanate in the inner container and dividing the number by the total contents of the inner container. This calculation determines the minimum concentration of unreacted MDI which could possibly be in the inner container.

As can be seen from the examples, Pauls utilizes major amounts of unreacted diisocyanates in the foaming mixture. There is no teaching nor suggestion in Pauls that a low diisocyanate prepolymer composition would be useful for producing a foaming composition. There is neither teaching nor suggestion to utilize the lacquer composition of Minato et al. or Schmalsteig et al. in a foaming composition.

At page 5 the second paragraph the Examiner states:

"Disclosures of preparing isocyanate components for polyurethane synthesis having reduced monomeric isocyanate content is at least pertinent to endeavors of a referenced inventor who is using isocyanates in preparations of isocyanate components used in prepolymers which are dispensed from cans."

This statement bears no relation to providing a pressurized container with a low content of unreacted monomeric isocyanates remaining in the container after use.

It is clear that none of the prior art references directed to foaming compositions teach or suggest such a system. Other systems such as Minato et al. and Schmalsteig et al. have other concerns such as solubility in lacquer solvents and lacquer pot life. These compositions are not known in the art for use in foaming compositions in disposable pressurized cans. Applicants submit that there is no suggestion to combine Pauls with Minato et al or Schmalsteig et al.

At the bottom of page 5 the Examiner states:

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"The fact that the secondary reference may not form foams does not negate their pertinence and relevance to the endeavor of preparing polyurethane products whose fundamental behaviors at a chemical level are not affected by the presence or absence of a blowing agent."

Appellants submit that compositions which cannot be used to make foams would not be relevant to the present invention. Since the products of Schmalsteig et al. are semi-rigid resins (page 4, lines 7-8) they would not suggest to one skilled in the art that the composition could be used to make a foaming composition which requires liquid materials.

At the third full paragraph at page 6, the Examiner states:

"Examiner holds that the NCO content value of 26-30% (present in claim 28 and 53) is not required by all claims, and, further, the Pauls reference discloses flexibility in control of NCO contents. Accordingly, variations in NCO content values is a variable which would have been within the practitioner's expertise having the teachings of Pauls before them in order to arrive at the products and/or processes of Applicants' claims with the expectation of success in the absence of a showing of new or unexpected results."

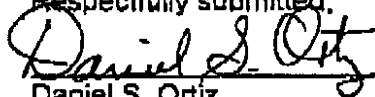
Pauls at col. 4, lines 8-1114 teaches that the NCO content of the prepolymer is from 5 to 25% by weight preferably 0 to 20% by weight based on the weight of the prepolymer. Minato et al. discloses, in the examples, that the NCO content is from about 21 percent to 23 percent by weight of the prepolymer. Schmalsteig et al. at page 2, lines 21-23 teaches that the NCO content is from about 11.8 to about 14.4 percent by weight.

The NCO content claimed in claims 28 and 53 (26-30% by weight) is far outside of any range of NCO content disclosed in the prior art cited by the Examiner. Appellants submit that there is no teaching nor suggestion to provide the composition of the invention with an NCO content in the range claimed. This is especially true in view of the broad range of 5% to 25% by weight disclosed in the Pauls et al. reference for a composition with a similar use. Appellants submit that Claims 28 and 53 are patentable over the prior art.

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In view of the above comments, Appellants respectfully request that the rejections be reversed.

Respectfully submitted,



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